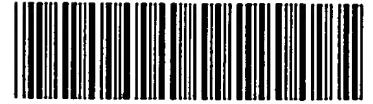


# 11



OIEP

## RAW SEQUENCE LISTING

DATE: 01/17/2003

PATENT APPLICATION: US/09/964,059B

TIME: 11:02:10

Input Set : N:\vernette\09964059B.RAW

Output Set: N:\CRF4\01172003\I964059B.raw

1 <110> APPLICANT: Frudakis, Tony  
 3 <120> TITLE OF INVENTION: Efficient Methods and Apparatus for High-Throughput  
 Processing of Gene

4 Sequence Data  
 6 <130> FILE REFERENCE: 0201-0001  
 8 <140> CURRENT APPLICATION NUMBER: US 09/964,059B  
 C--> 10 <141> CURRENT FILING DATE: 2002-12-23  
 12 <150> PRIOR APPLICATION NUMBER: US 60/274,686  
 13 <151> PRIOR FILING DATE: 2000-03-08  
 15 <160> NUMBER OF SEQ ID NOS: 239

17 <210> SEQ ID NO: 1  
 18 <211> LENGTH: 480  
 19 <212> TYPE: DNA  
 20 <213> ORGANISM: Homo Sapiens  
 22 <400> SEQUENCE: 1

ENTERED

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 24 tacagcagct gtaactgatt gaaatgtatt ttatgaacaa taagacttga aagttaaaat 120  
 25 tgctccttta tccatgtact gaagaataaa tattgtgaaa gcagtcataa aaacagaagt 180  
 26 aatcttttgg tacctctgca ttagaactct ttattaacca ggtgtattgc cattcaacag 240  
 27 taatatattg aaaggaatct ctatttttga gcagggttca acttctgctt tttattttta 300  
 28 acagtagact tgaaatattc agtaaccatg ctataaagag ctatgctgta agacagcttt 360  
 29 ttctatttat agagcatggg ttigaaatta taacaaagca tgggttttat cctgaaatca 420  
 30 ttcataaata acacgtacca aaactttaat acgggctagc cagtgtgagc cagtgtgagc 480

32 <210> SEQ ID NO: 2  
 33 <211> LENGTH: 22  
 34 <212> TYPE: DNA  
 35 <213> ORGANISM: Homo Sapiens  
 37 <400> SEQUENCE: 2

38 ttccagaagg ctttccattt ac 22  
 40 <210> SEQ ID NO: 3

41 <211> LENGTH: 21  
 42 <212> TYPE: DNA  
 43 <213> ORGANISM: Homo Sapiens  
 45 <400> SEQUENCE: 3

46 gttcaagtct tggtagctgc t 21  
 48 <210> SEQ ID NO: 4

49 <211> LENGTH: 780  
 50 <212> TYPE: DNA  
 51 <213> ORGANISM: Homo Sapiens  
 53 <400> SEQUENCE: 4

54 gaattctttc cagaaggctt tccatttact tttcctagat tcatcagaag aatcattatc 60  
 55 tacagcagct gtaactgatt gaaatctatt ttatgaacaa taagacttga aagttaaaat 120  
 56 tgctccttta tccatgtact gaagaataaa tattgtgaaa gcagtcataa aaacagaagt 180  
 57 aatcttttgg tacctctgca ttagaactct ttattaacca ggtgtattgc cattcaacag 240

## RAW SEQUENCE LISTING

DATE: 01/17/2003

PATENT APPLICATION: US/09/964,059B

TIME: 11:02:10

Input Set : N:\vernette\09964059B.RAW

Output Set: N:\CRF4\01172003\I964059B.raw

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58 taatattttg aaaggaatct ctatttttga gcaggtttca acttctgctt tttattttta 300
59 acagtagact tgaaatattc agtaaccatg ctataaagag ctatgctgta agacagcttt 360
60 ttctattttat agagcatggt tttgaaatta taacaaagca tgggttttat cctgaaatca 420
61 tgctccttta tccatgtact gaagaataaa tattgtgaaa gcagtcataa aaacagaagt 480
62 aatcttttgg tacctctgca ttagaactct ttattaacca ggtgtattgc cattcaacag 540
63 taatattttg aaaggaatct ctatttttga gcaggtttca acttctgctt tttattttta 600
64 acagtagact tgaaatattc agtaaccatg ctataaagag ctatgctgta agacagcttt 660
65 ttctattttat agagcatggt tttgaaatta taacaaagca tgggttttat cctgaaatca 720
66 tgctccttta tccatgtact gaagaataaa tattgtgaaa gcagtcataa aaacagaagt 780
68 <210> SEQ ID NO: 5
69 <211> LENGTH: 510
70 <212> TYPE: DNA
71 <213> ORGANISM: Homo Sapiens
73 <400> SEQUENCE: 5
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75 taatattttg aaaggaatct ctatttttga gcaggtttca acttctgctt tttattttta 120
76 acagtagact tgaaatattc agtaaccatg ctataaagag ctatgctgta agacagcttt 180
77 ttctattttat agagcatggt tttgaaatta taacaaagca tgggttttat cctgaaatca 240
78 tgctccttta tccatgtact gaagaataaa tattgtgaaa gcagtcataa aaacagaagt 300
79 aatcttttgg tacctctgca ttagaactct ttattaacca ggtgtattgc cattcaacag 360
80 taatattttg aaaggaatct ctatttttga gcaggtttca acttctgctt tttattttta 420
81 acagtagact tgaaatattc agtaaccatg ctataaagag ctatgctgta agacagcttt 480
82 ttcataaata gcacgtacca agacttgaac 510
84 <210> SEQ ID NO: 6
85 <211> LENGTH: 22
86 <212> TYPE: DNA
87 <213> ORGANISM: Homo Sapiens
89 <400> SEQUENCE: 6
90 ttccagaagg ctttccattt ac 22
92 <210> SEQ ID NO: 7
93 <211> LENGTH: 21
94 <212> TYPE: DNA
95 <213> ORGANISM: Homo Sapiens
97 <400> SEQUENCE: 7
98 ggtacctctg cattagaact c 21
100 <210> SEQ ID NO: 8
101 <211> LENGTH: 21
102 <212> TYPE: DNA
103 <213> ORGANISM: Homo Sapiens
105 <400> SEQUENCE: 8
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108 <210> SEQ ID NO: 9
109 <211> LENGTH: 22
110 <212> TYPE: DNA
111 <213> ORGANISM: Homo Sapiens
113 <400> SEQUENCE: 9
114 ttgcatgttg caaatgatgt cc 22
116 <210> SEQ ID NO: 10
117 <211> LENGTH: 20

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## RAW SEQUENCE LISTING

DATE: 01/17/2003

PATENT APPLICATION: US/09/964,059B

TIME: 11:02:10

Input Set : N:\vernette\09964059B.RAW

Output Set: N:\CRF4\01172003\I964059B.raw

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125 <211> LENGTH: 21
126 <212> TYPE: DNA
127 <213> ORGANISM: Homo Sapiens
129 <400> SEQUENCE: 11
130 cctctcaagc acattgatca c        21
132 <210> SEQ ID NO: 12
133 <211> LENGTH: 21
134 <212> TYPE: DNA
135 <213> ORGANISM: Homo Sapiens
137 <400> SEQUENCE: 12
138 tatactgatac tgagctgagg c      21
139 <210> SEQ ID NO: 13
140 <211> LENGTH: 22
141 <212> TYPE: DNA
142 <213> ORGANISM: Homo Sapiens
144 <400> SEQUENCE: 13
145 taacattcac actaatggca gc      22
147 <210> SEQ ID NO: 14
148 <211> LENGTH: 20
149 <212> TYPE: DNA
150 <213> ORGANISM: Homo Sapiens
152 <400> SEQUENCE: 14
153 tgcttctcct ctagaggctg        20
155 <210> SEQ ID NO: 15
156 <211> LENGTH: 240
157 <212> TYPE: DNA
158 <213> ORGANISM: Homo Sapiens
160 <400> SEQUENCE: 15
161 aacttagcaa acacatgatac ttgtatatag tagacatcat tattgttttc ccctctattc 60
162 ttcttttcaa tttctgaatc ataaggattg cctgagccta ggagatcaag gccagccttg 120
163 gcaacatggc gaaatgccat ctctacaaaa aaaaaaaaaa aaattatcta ggtgtggtgg 180
164 caagcaccag tgggtcccagc tactcagaag gctgaggtgg gaggattgct tgagcccagg 240
166 <210> SEQ ID NO: 16
167 <211> LENGTH: 420
168 <212> TYPE: DNA
169 <213> ORGANISM: Homo Sapiens
171 <400> SEQUENCE: 16
172 agtagagtgc tggcatactc agtaagacta tattgaataa atgaatgaat aaccccagaa 60
173 taaaaatgta actataaatg tggtatccta ggtctcaaat cagaatgatac tgaaagttag 120
174 gaaaccccccc tgccactgca gagatctcat ctacttttta tgtcctatta taatgggaga 180
175 ctatggcaag aaatttttga tatctacaga atagatctct atttggaacca attttcatct 240
176 ttgttttgatt caataaacag gctaagttct acttacgaag cctataaaaac tccaaaactc 300
177 caaatatcca catattccta aatatgtcac ctaactctaa tacatatata acatgatgag 360
178 tacacatcct gtccattttc aagaacttat gcactcatca ctgtacacct tgatatctag 420

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## RAW SEQUENCE LISTING

DATE: 01/17/2003

PATENT APPLICATION: US/09/964,059B

TIME: 11:02:10

Input Set : N:\vernette\09964059B.RAW

Output Set: N:\CRF4\01172003\I964059B.raw

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180 <210> SEQ ID NO: 17
181 <211> LENGTH: 3360
182 <212> TYPE: DNA
183 <213> ORGANISM: Homo Sapiens
185 <400> SEQUENCE: 17
186 agttaatgca cacagtttgg ctagttttgg cttcaaaatt aattaaactg tatcaatgta 60
187 ttttgaagtg ttaagtcac tgtatgcttt agctccttct atagatgagg caaatataca 120
188 aacagattaa actgactttt acagaataat tattctttta ccttgtttac atggaaagga 180
189 atcctccatt ttaggatgca cataaaatgc cagcctatgt tgatgacatt gccttaaacac 240
190 ttttttttta agtaatttta cagggtagtt aacctgtaaa agaaacagtg gataaacttg 300
191 aaaatgctaa tagcaaaaaa cacttcagcc atggcacata caaccagaag ccaatgatat 360
192 ccttcaacta tagaaattag cgggtgtttc tgtttattcc tgaagcagga ttccatattc 420
193 aagccagaaa ttgtcattca acagaaaaaa tcaggtcaaa acaatcaatc acataatgta 480
194 gcaagacaaa agtatgtgct tatgtgaaga aaaacaaaaa caacaaataa ccgaactttt 540
195 attttcttga atataatatt gatggcaaga ttgctaagag gtcatccctg tatttagttt 600
196 agataaaggc ttccagcata gaacactgtt aagaagtaac tgtcaggagc tatgcagaag 660
197 tgatgagagg caaataatat aaaaactaga aaagcagggt ttaattttct atagacttta 720
198 ttacacatta ttatgttacg agacaaatgc agataattct taatttatca aatttgtgag 780
199 cttaattaac aaaaatatatt gaccctcacc agaaaaacag ataactctaa atctactctg 840
200 aaaatctaata caattgcgaa gtattaccta tttggagact atgtattata tcaaagataa 900
201 agctactatt ctacagaaac atatggggtc attggcagcc aaccaataat gaagtaaata 960
202 ttctaataatt tgggaaaata ctgagaaaac taataaattg tcctggatat tatttattct 1020
203 tgcttttaca aaagacttac acatccaaat gagattagtt tagaatagag gtttttagtt 1080
204 cagaaaatgt tcaaagtcca atacagtcac ggctaatacag agactagaga acctttataa 1140
205 aggtaagtag gcttgaaaac ccttggaagc tgagcagtc tttttgaac tagcatgttt 1200
206 taatcaaagg tatggaatta atcaaatatc aattaagaat tactggaatg cacactcatg 1260
207 ccaaatagaca actaacatgt ttttcctac tatgatgact ctttgatttg agtcagatgg 1320
208 cataaaaaaa tattgctagc tatacaataa attttactct tctgcttctg ctctctaaaag 1380
209 aaaaatccta ttttttcaca taagaagctc atggaatcga atgttaatta aagaaaagat 1440
210 agggtaagta caactggggg aaagacagta cctctaatta cataggaaat ccatgaaaga 1500
211 attaatcatc ataagagaag aatcattttt ccagtagccc cactaccatg aatgatattt 1560
212 tcatgagcct cggccacctt ctccaatgga tattgagaac ctatcacagg tttcaaccag 1620
213 ccaatttcca ttccagcttg aagggtgct gcatattgct gaaattcctc ctaagaaaag 1680
214 gaaaaacaaa tttctttttg tagtgaaccg tatgatttaa ttttcagaag cattaaaaaac 1740
215 acttcagaat ctaagtgtta taccatgaag agtctcttac aaatgtgtga cttttgtcaa 1800
216 cttgtccaga actatagaaa aagtagttat ctacagggta accataaatc ccatctgcct 1860
217 gagacagtgt tagtgtacaa aatacctgtt gtcctgaaat tattactagt atcacatttc 1920
218 tatctcaaaa ggtatgctta cctggatata aattatactg tcaccctagt tgccttctg 1980
219 gtgactaatc cttaccaact cccactagtc atataactaa gtttaacatc tattcaaact 2040
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221 tcttttctta ccttgggttg ggaagagaga gtaactccaa ttatactcga ctcccttgcc 2160
222 atggtgtctc gtgggtttat ttcaatagta cctctgctgc caacaacctc acatgaaaaa 2220
223 cagcaattct acagttaaaag attactgtaa aatagtgtta aattgtggta aaacattaaa 2280
224 gtggtaaaaa aaaaaaaaag aaaaggaata cttactatca ctcgtcctcc atgtgacaga 2340
225 agactcaagt ctttactaag atttacatta gctaacattt caataattat atcaattcct 2400
226 ttctcaccaa catacttcta tataataaaa gagaaatgta gagtaagata gcaagtgaag 2460
227 aactgtaaaa tagtacttat ctgtacaaga tattatagaa atatgtttca aatgatatat 2520
228 aaatgtacaa tctttgagac taataatgca aaattttaaa taatctaatt atataatcac 2580
229 gatgtaattc caaggtagca gccagaacat ctaaaactgat aaaaatttgt actaaatata 2640

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## RAW SEQUENCE LISTING

DATE: 01/17/2003

PATENT APPLICATION: US/09/964,059B

TIME: 11:02:10

Input Set : N:\vernette\09964059B.RAW

Output Set: N:\CRF4\01172003\I964059B.raw

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231 aaataacttag ctgaaaattt tctatctgta aaataaaactt tcataaaagaa acaataaatc 2760
232 aaaagcccca aacccccagg gggctcccat ttttattaat aaacaaaaag caaaagaaga 2820
233 tatcattagc tgttcggttt tgcatgattt ttgttgtttt agtgcathtt gttttgttct 2880
234 aaatggttta tcatctgttt gatgcactaa ctcttttggg ctcttggtat ttggagcgtg 2940
235 gctcttacaa aaagctacac acatctacat tatattcatt ttattttaac acacacacac 3000
236 aaatgaatcc ctgtgcccgg gattgcacta ggtaccagga atacaaatac aaacataggg 3060
237 agctcaaaac aaaactagtg agaaagatgg gaaatactac agtcatagct ataaagttaat 3120
238 gggctaagta acacattagc agaaataaat catagaatac agagaaaaaa ggtaaggtt 3180
239 tgattgcctg ccatggtcag ataaagttcc acagagacga tgaactgggc cctcagggat 3240
240 gaataggagt ttcccaagcc aaaagaaaag aaaatgagta aggggaagct agacctgagg 3300
241 ctgagtcagt ctggaccaaa gaaacagaaa agcaaagatg gaggggactg agaacacaag 3360
243 <210> SEQ ID NO: 18
244 <211> LENGTH: 2460
245 <212> TYPE: DNA
246 <213> ORGANISM: Homo Sapiens
248 <400> SEQUENCE: 18
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250 cttaggttcc ccagacgtat aacaaaggag tgcttttgtt cggctttttg gcaagatgat 120
251 tgcaaaaaag gtaataaact ctcaacttta ttttttctt catttgtaat gatctaattt 180
252 acacagtact caatatattg gaaattctaa tctcccaac gtgagggaag gggtgaggat 240
253 tagcaaagca ataagtgttt agcaaattgc taatatagta caagtgaaga acttcagaat 300
254 ctgcttgaat tctgttaaat gcagcaacta aataaatgcc acctcaccat tttggatgca 360
255 gtagtgatta ttcttccaaa gcatccagct aacaaatgaa ctttattccc tgggccacac 420
256 agatccagtt tgtaatttac agatatctca ccttccatgg agaattcaca tcagtagaaa 480
257 ttatattaag aatacctcac agctgcaaat acaaagctgc agctttactt agaattgtat 540
258 ttgcattaaa aaatcaattt ttatagctct aagattctag agaagctata ttctatttaa 600
259 tacacataaa caatacaaaa atgatatgta aagtttaaaa cttagacatc tgttttttta 660
260 ataaattaaa gttttaaaac acgcataaaa attcatcgca ctgaaaaaag gaagcaaaca 720
261 gctttaaagg agtagttggt taaaaacata ttaaaaaacc acgcaagtct ccaaggaaca 780
262 aagtttgact tttgtaaaac agtggaatat ttaccttaa ttttatcaat gtaattcact 840
263 tctctgtgat tgaacacttc atgggctcca ttttgcaaaa caatcttttg tcttctctca 900
264 gtaccagcag tgcccaaaat ctttaagcca taagctctag caatttggca tgctgctaat 960
265 ccaacctgaa aaacaaatat aaccaagag ttatatattc tctacactcc tgtaaacact 1020
266 taaatacata caatgaactt aagattccta taggaccac cctaacttta aggaacttaa 1080
267 gagtgtaaat gaagaaataa gaaaaacagc taactttaat tgagcattta aaatattcca 1140
268 ggaaccatac taaataattt ctacatattg ttttattcta tcttcacaaat gacctataa 1200
269 agtagatact attattgtcc ctattgtaca gataagaaag ttgaagcttc aaattataag 1260
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274 gagtgtttac gatgtgctag acatggtact taatgtaaga aataaactta tattctaagg 1560
275 gtggagggaag ataatagtca tatgaatgaa taaaataaat tcaggaaata aaagtgttaa 1620
276 gaaaaaataa gactggctgt tgggttaaag agacaggaat aggggctatt taggtcatca 1680
277 ggaagagcca ctctgaaaaa atgagacctg aaaaaagtga ggaacaagcc acgagaacat 1740
278 ccggtcagcc acgtggagga tgctgtgggc atagtgaatg gccatggcta acctggcgag 1800
279 gtgggaatgc agttggggtc aagaacagca aagaggggca gtgtgtctca gggaggggag 1860
280 tgtacgaaag ggtcgaagat gaggccagaa aggccaagtc acacagaatc tgaggggtga 1920

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RAW SEQUENCE LISTING ERROR SUMMARY  
PATENT APPLICATION: US/09/964,059B

DATE: 01/17/2003  
TIME: 11:02:11

Input Set : N:\vernette\09964059B.RAW  
Output Set: N:\CRF4\01172003\I964059B.raw

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:20; N Pos. 369  
Seq#:63; N Pos. 1,2,3  
Seq#:146; N Pos. 21,41  
Seq#:147; N Pos. 21,41  
Seq#:148; N Pos. 41  
Seq#:149; N Pos. 8,41  
Seq#:150; N Pos. 8,41  
Seq#:151; N Pos. 41  
Seq#:152; N Pos. 41  
Seq#:158; N Pos. 2  
Seq#:159; N Pos. 2  
Seq#:160; N Pos. 2  
Seq#:161; N Pos. 2  
Seq#:162; N Pos. 2  
Seq#:163; N Pos. 2  
Seq#:164; N Pos. 2  
Seq#:165; N Pos. 2  
Seq#:166; N Pos. 2  
Seq#:167; N Pos. 2  
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Seq#:170; N Pos. 2  
Seq#:171; N Pos. 2  
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Seq#:173; N Pos. 2  
Seq#:174; N Pos. 2  
Seq#:175; N Pos. 2  
Seq#:177; N Pos. 4  
Seq#:178; N Pos. 4  
Seq#:179; N Pos. 4  
Seq#:180; N Pos. 4  
Seq#:181; N Pos. 4  
Seq#:182; N Pos. 1,2  
Seq#:183; N Pos. 1,2,3,4,5,6  
Seq#:184; N Pos. 2  
Seq#:185; N Pos. 2  
Seq#:186; N Pos. 2  
Seq#:187; N Pos. 2  
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Seq#:189; N Pos. 4  
Seq#:190; N Pos. 2  
Seq#:191; N Pos. 2  
Seq#:192; N Pos. 2  
Seq#:193; N Pos. 2

RAW SEQUENCE LISTING ERROR SUMMARY  
PATENT APPLICATION: US/09/964,059B

DATE: 01/17/2003  
TIME: 11:02:11

Input Set : N:\vernette\09964059B.RAW  
Output Set: N:\CRF4\01172003\I964059B.raw

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Seq#:200; N Pos. 4  
Seq#:204; N Pos. 4  
Seq#:206; N Pos. 5  
Seq#:208; N Pos. 4  
Seq#:209; N Pos. 2  
Seq#:210; N Pos. 2  
Seq#:212; N Pos. 2  
Seq#:213; N Pos. 2  
Seq#:214; N Pos. 1,2,10  
Seq#:218; N Pos. 2  
Seq#:219; N Pos. 2  
Seq#:220; N Pos. 96,120,148,149,150,175  
Seq#:235; N Pos. 9,10,12  
Seq#:236; N Pos. 9,10,11,12,13